

Anniversary Meeting of the Royal Society.

SIR ERNEST RUTHERFORD, in his presidential address at the anniversary meeting of the Royal Society on Nov. 30, referred to the scientific careers and work of the twelve fellows and three foreign members who died during the year. Among other subjects surveyed in the address are the publications of the Society and the attendance at the ordinary meetings. Sir Alfred Mond, on behalf of Imperial Chemical Industries, Ltd., has offered a subscription of £1000 a year until further notice to help to meet the deficit on the publication account, in substitution of that of £500 a year for three years made by Messrs. Brunner, Mond and Co. in 1925; and the Council has gratefully accepted the gift. Since the War "there has been a notable increase in the number of papers published by the Society. This is specially marked in the 'A' *Proceedings*, where, in place of one volume a year before the War three or four volumes now appear, the separate numbers being issued with promptness and regularity."

As one means of increasing the interest, and therefore the attendance, of fellows at the meetings of the Society, facilities have been provided for the display of experiments or demonstrations in the tea-room before and after the reading of papers.

We print elsewhere in this issue Sir Ernest Rutherford's remarks upon the results of investigations carried out in recent years to produce intense magnetic fields and high voltages for general scientific purposes; and we subjoin extracts from descriptions of the work of this year's medallists.

Presentation of Medals.

THE COPLEY MEDAL, AWARDED TO SIR CHARLES SCOTT SHERRINGTON.

Sherrington early chose as the special field of his investigations the physiology of the central nervous system. To this, during some thirty years, he has steadily devoted his great skill in experiment, bringing the immense complexities of its function within the range of objective analysis, and revealing fundamental plan and orderly sequence in the reflex actions by which it controls the activities of the body, and continuously adjusts them to the environment. The results of this work have been embodied in a series of some two hundred original memoirs, presenting a continuous record of progressive investigation. The earlier stages have been brought under review and treated synthetically by Sherrington in his now famous Silliman Lectures on "The Integrative Action of the Nervous System." In these he deals with the occurrence and significance of the muscular rigidity which appears when the higher brain is removed, with the co-ordination of muscular movements by reciprocal excitation and inhibition of antagonistic muscles, with the rhythmical, phasic activity which the conflict produces in the centres concerned with certain movements, and with the appearance of a purposeful character which the integrating action impresses on many forms of reflex response. The influence of Sherrington's investigations has spread far beyond the limits of his own laboratory and has inaugurated a new era in neurological investigation throughout the world.

A ROYAL MEDAL, AWARDED TO PROF. JOHN CUNNINGHAM McLENNAN.

For more than thirty years Dr. J. C. McLennan has been an industrious and enthusiastic experimenter, his papers being mainly concerned with radio-activity, gaseous conduction of electricity, the spectra of the elements, and the liquefaction of gases. Among

his works of outstanding merit may be mentioned the measurements he has made with his pupils on the fine structure of spectral lines, which are of much importance to modern theories of the mechanism of the atom. Recently he has had quite sensational success in tracing to its source the elusive auroral line $\lambda 5577$, an extremely difficult task which had baffled the skill of many previous investigators. This is important not only in itself but also on account of the information it yields as to the structure of the upper atmosphere. Apart from his own private researches he has built up a most efficient school of physics in Toronto, and is largely responsible for the present strong position of physical science in Canada. He has devoted much energy to the establishment of a cryogenic laboratory in Toronto, a heavy task which he has carried out with much success.

A ROYAL MEDAL, AWARDED TO SIR THOMAS LEWIS.

From 1911 onwards to the present day, Sir Thomas Lewis has taken a leading part in the remarkable growth of our knowledge of the mammalian heart-beat, which has been one of the conspicuous scientific achievements of the period in question. Lewis's researches enabled him to locate the point of origin of the beat, and to plot out the course of the wave of excitation over the ventricles and auricles of mammals. By extending these observations to the hearts of representative vertebrates, he was able to compare the modes of spread of the wave with the special forms of the electrocardiogram, and thus to appreciate clearly the meanings of the several deflexions. Further extension to diseased hearts led to the interpretation of the abnormalities of the electrocardiographic record.

In 1911 Lewis was able to show that, as Cushny had previously suggested, certain cardiac irregularities are due to fibrillation of the auricles; and his later clinical and experimental work on auricular fibrillation and flutter suggest that the irregularities are due to the formation of an endless circulating wave of contraction in the auricles. Quite recently he has published the results of investigations of the peripheral circulation, upon which he has been engaged during the past twelve years.

THE DAVY MEDAL, AWARDED TO PROF. ARTHUR AMOS NOYES.

Prof. Noyes's researches have been chiefly concerned with the properties of solutions, in particular of electrolytic solutions. Soon after the inception of the electrolytic dissociation theory of Arrhenius, it was recognised that all was not well with the strong electrolytes. Whilst qualitatively their properties were accounted for by the theory, there yet existed marked quantitative discrepancies. Accurate measurement of the properties of such solutions was the first requisite for the attack of the problem, and to this task Noyes applied himself. His investigation of the conductance of aqueous solutions up to temperatures as high as 300° forms a classical example of exact physico-chemical measurement executed under conditions of great experimental difficulty.

His work on the influence exerted by one salt on the solubility of another, on transport numbers and the mobilities of the ions, on the ionisation of pure water at different temperatures, is all directed to the same end. Noyes showed the importance of the classification of the strong electrolytes according to their valency type and, more than twenty years ago, attempted to take into account the electrostatic forces between the ions. He thus foreshadowed the modern

theory now so widely developed by Noyes himself amongst other workers.

THE BUCHANAN MEDAL, AWARDED TO DR. MAJOR GREENWOOD.

Dr. Greenwood is specially distinguished for the statistical study of medical subjects, having applied the statistical method to the elucidation of many problems of physiology, pathology, hygiene and epidemiology. He has been pre-eminent in encouraging and developing the use of modern statistical methods by medical laboratory investigators and in securing the adequate planning and execution of field investigations. He is almost unique in the possession of both the medical knowledge and mathematical ability which are essential in these researches.

THE HUGHES MEDAL, AWARDED TO DR. WILLIAM DAVID COOLIDGE.

Science is under a great debt to Dr. Coolidge for the invention and production of a new type of X-ray tube, called by his name, of great flexibility and power, which has proved of great service not only to medical radiology but also in numerous scientific researches. In the last few years he has applied his unrivalled technical knowledge to the generation of high-velocity cathode rays, which can be passed into the air through a thin window as in Lenard's pioneer experiments thirty years ago. Such researches are of great importance to science, as they promise to provide us with new methods of obtaining a copious supply of swift electrons and high-speed atoms of matter for experimental investigations.

University and Educational Intelligence.

CAMBRIDGE.—Mr. J. E. Wherry has been elected to an honorary fellowship at Downing College. Mr. H. A. Roberts, Secretary of the Appointments Board, has been elected to a fellowship at Gonville and Caius College. Mr. F. C. Phillips has been elected to a fellowship at Corpus Christi College.

Prof. Nuttall, Magdalene College, has been re-elected Quick professor of biology. Mr. F. C. Bartlett, St. John's College, has been reappointed reader in experimental psychology. Miss M. S. Willis, Girton College, has been appointed demonstrator in geography.

It is proposed to add the Astronomer Royal, the Hydrographer of the Navy, the Director-General of the Ordnance Survey, and the Chief of the Geographical Section of the General Staff at the War Office to the committee for geodesy and geodynamics.

LONDON.—Prof. E. C. Williams, who has held the Ramsay Memorial Chair of Chemical Engineering at University College since 1923, has resigned in order to occupy an important post in the Shell Oil group. His absence will be the active development of the group's research organisation in California. Prof. Williams, who was a distinguished graduate and scholar of the University of Manchester, was employed for five years by the British Dyestuffs Corporation, and for one year as research chemist to the Joint Committee of the University of Leeds and the National Benzole Association. At University College, in temporary buildings, he has conducted courses of instruction on lines which he described in an inaugural address at the College in 1924. His work has been remarkably successful, and abundant evidence is forthcoming of the advantages gained by students who have added to their ordinary university curriculum in chemical science a period of study in the Ramsay Department of Chemical Engineering. The measure of success achieved has encouraged the

College to an immediate and considerable development of the Department. A very strong and influential committee has been formed for the purpose of collecting a building and endowment fund, with Sir Alfred Mond as chairman, Sir R. Waley Cohen as vice-chairman, Sir David Milne Watson as honorary treasurer, and Sir Frank Heath as honorary secretary.

The title of professor of chemistry in the University has been conferred on Dr. J. F. Spencer, in respect of the post he holds at Bedford College. Prof. Spencer studied at University College, Liverpool, and at the University of Breslau. Since 1905 he has worked in the Department of Chemistry at Bedford College; in 1915 the title of reader in physical chemistry was conferred on him, and since 1919 he has been head of the department. His published work includes "The Metals of the Rare Earths" (1919), "An Experimental Course of Physical Chemistry," "The Magnetic Susceptibility of some Binary Alloys (with M. E. John, *Proc. Roy. Soc., A*, 1927), and numerous papers in chemical journals.

A course of five free public lectures on "The Technique of Bacteriological Research" will be given by Mr. F. W. Twort, at the Royal College of Surgeons of England, on Dec. 5, 7, 9, 12, and 14, at 4 o'clock.

OXFORD.—Sir Edward Farquhar Buzzard, of St. Thomas's Hospital, Physician Extraordinary to the King, the newly appointed Regius professor of medicine, is well known as the author of numerous treatises upon diseases of the nervous system. He was one of the first of a highly talented succession of medical men at Magdalen College, including Drs. Jex-Blake and Golla of St. George's, Dr. Hurst of Guy's, Dr. Singer and Sir Bernard Spilsbury. He has also filled the office of secretary of the Royal Society of Medicine.

The wing of the Engineering Laboratory, recently completed, was open to the inspection of a large party of guests invited by the Vice-Chancellor and Prof. Jenkin on Nov. 24. By this addition, much-needed space will be found for the electrical equipment of the laboratory. Demonstrations were given of the methods of using the various testing machines.

An examination for the Radcliffe Travelling Fellowship, for which women are now also eligible, will commence on Feb. 14, and candidates are requested to send in their names to the Regius professor of medicine on or before Feb. 1, 1928.

The King has consented to open the new buildings of University College, Nottingham, which have been given by Sir Jesso Boot, probably some time in July next.

SIR JAMES CURRIE, formerly Principal of the Gordon College at Khartoum and Director of Education in the Sudan, has been appointed chairman of the governing body of Imperial College of Tropical Agriculture, in succession to Sir Arthur Shipley, who died on Sept. 22 last.

The Committee of Award of the Commonwealth Fund Fellowships announces that it is now prepared to receive applications for the fellowships to be awarded in 1928. Last year there were 115 candidates, and 22 appointments were made. The fellowships are normally tenable at an approved American university for two years, and are open to persons of British birth domiciled in England, Scotland, Wales, and Ireland, who are graduates of recognised universities and are unmarried, and not more than thirty years of age. Women as well as men may apply. Provision amount-